INDEX.

PAGE

Abbott, Benjamin Vaughan 340, 794
Academy, The Philadelphia 531
Alcohol, Disinfection of 428
Allen, Professor Grant 591, 817
American Climate and Character 109
American Scientific Association 267
Ancient Masons' Marks, Significance of 426
Anecdote, The Anatomy of an Old 369
Animal Retribution 861
Animals and the Telegraph 574
Animals, How they Breathe. (Illustrated.) 448, 742
Animals, The Reversion of Domesticated, to the Wild State 716
Animals, Wild, as Man's Associates 528
Anthrax, Vaccination for 142
Anti-Resonators, Metallic 140
Archæologists, German and Austrian, Congress of 571
Architecture, Acoustics in 572
Armsby, H. P 378
Astronomy in High-Schools 300

Bacheler, A. W., Letter from 843
Ball, Professor Robert S 479
Beebe, William S., Letter from 403
Bellows, Henry W 700
Bigelow, Albert, Letter from 843
Billson, William W 369
Biology in Public Schools 713
Birds, Jurassic, and their Allies 312
Birgham, Francis 83
Blood, Circulation of, in the Brain 718
Books noticed:
"Ancient Bronze Implements of Great Britain and Ireland" (Evans). 127
"The Journal of Physiology 128
"Volcanoes" (Judd.) ("International Scientific Series.") 129
"The Bible and Science" (Brunton) 129
"Sorghum and Corn-stalks" (Collier) 131
"Naso-Pharyngeal Catarrh" (Coomes) 131
"The Hysterical Element in Orthopedic Surgery" (Shaffer) 132
"Industrial Applications of Chemistry" (Mallet) 132
"Educational Journalism" (Bardeen) 132
"Septicæmia in the Rabbit produced by Human Saliva" (Sternberg).. 132

Books noticed: PAGE

"What shall we do with the Inebriate?" (Crothers) 132
"Report of Wisconsin State Board of Health" 132
"Synopsis of the Fresh-Water Rhizopods" (Hitchcock) 133
"Mineral Resources of the Hocking Valley" (Hunt) 133
"Butterflies, Structure, Changes, etc." (Scudder) 133
"Primitive Industry" (Abbott) 133
"Hygiene of Bright's Disease" (Edwards) 134
"The Figure of the Earth" (Merriman) 134
"Rugby, Tennessee" (Hughes) 134
"Pharmacology and Therapeutics" (Brunton) 134
"Suicide" (Morselli). ("International Scientific Series.") 275
"The Foreigner in China" (Wheeler) 279
"A Hand-book of Vertebrate Dissection" (Martin and Moale) 280
"Algebra for Schools and Colleges" (Newcomb) 281
"Man's Origin and Destiny" (Lesley) 282
"The Microscope and its Revelations" (Carpenter) 283
"Artificial Anæsthesia and Anæsthetics" (Lyman) 409
"Teaching Chemistry and Physics in the United States" (Clarke) 411
"Illustrations of the Earth's Surface. Glaciers" (Shaler) 411
"Synchronological Chart of Universal History" (Adams) 412
"Mexican Paper: An Article of Tribute" (Valentini) 413
"Noxious and Beneficial Insects of Illinois" (Thomas) 413
"The Landa Alphabet" (Valentini) 413
"Outlines of Morphology, Physiology, and Classification of Plants" (McNab) 414
"Seedless Fruits" (Sturtevant) 414
"Loxolophodon and Uintatherium" (Osborn) 415
"Ancient Philosophy, from Thales to Cicero" (Mayor) 415
"Report of the Chief Signal Officer for 1879" 416
"Report of the Horological and Thermometric Bureaus of the Winchester Observatory, Yale College" (Waldo) 416
"Field Experiments with Fertilizers" (Atwater) 416
"Smithsonian Institution Report for 1880" (Baird) 417
"Short History of the Bible" (Keeler) 417
"The Spelling Reform" 417
"English History for Young Folks" (Gardiner) 417
"Maximum Synchronous Glaciation" (McGee) 417
"Circulars of Information of the Bureau of Education" 418
"The Disposal of the Dead" (Bermingham) 418
"Pliocene Man in America" (Southall) 418
"Cotton Production of Louisiana" (Hilgard) 418
"The Young Folks' Astronomy" (Champlin) 418
"The Total Solar Eclipse of July, 1878" (Langley) 419
"Papers on American Archæology" (Bandelier) 419
"Materialism, Ancient and Modern" 419
"Sea-Mosses" (Hervey) 419
"Concepts and Theories of Modern Physics" (Stallo) 557
"The French Revolution" (Taine) 560
"The Harrowgate Waters" (Lewis) 562
"Report of Commissioner of Education for 1879" 562

Books noticed: PAGE
"Mechanics' Liens" (Hoyt) ... 562
"Report of Geographical Surveys west of the One Hundredth Meridian" ... 563
"English History for Students" (Gardiner and Mullinger) ... 563
"First Annual Report of the United States Geological Survey" (King) 563
"Manual of Sugar Analysis" (Tucker) ... 564
"Book of the Black Bass" (Henshall) ... 564
"The Human Figure" (Warren) ... 564
"The Wandering Jew" (Conway) ... 564
"Comparative Mythology and Folk-lore" (Cox) ... 565
"Uranometria of the Southern Heavens" (Gould) ... 700
"The Law of Personal Rights (Willard) ... 701
"The First Book of Knowledge" (Guthrie) ... 702
"Ecce Spiritus" ... 702
"The Land of the White Elephant" (Vincent) ... 703
"The Honey-Ants of the Garden of the Gods," etc. (McCook) ... 703
"Suicide" (O'Dea) ... 704
"Nature and Function of Art" (Eidlitz) ... 705
"Dangers to Health" (Teale) ... 706
"A Study of the Pentateuch" (Stebbins) ... 706
"The Opium-Habit and Alcoholism" (Hubbard) ... 706
"Autobiography of Mark Rutherford" (Shapcott) ... 707
"The League of the Iroquois" (Hathaway) ... 707
"Zoölogical Atlas" (McAlpine) ... 707
"The Verbalist" (Ayres) ... 708
"New System of Ventilation" (Gouge) ... 708
"Celestial Objects for Common Telescopes" (Webb) ... 708
"The Labor Question" ... 708
"Elements of Quaternions" (Hardy) ... 708
"The Brain and its Functions" (Luys.) ("International Scientific Series.") ... 847
"Text-Book of Organic Chemistry" (Strecker) ... 849
"Sensation and Pain" (Taylor) ... 849
"Antiseptic Surgery" (Championnière) ... 851
"Origin of Primitive Superstitions" (Dorman) ... 851
"Calendar of the University at Tokio" ... 852
"English Philosophers: Bacon" (Fowler) ... 852
"Elements of Geometry" (Newcomb) ... 853
"History of Settlements along the Hudson and Mohawk Rivers." (Fernow) ... 853
"House-Life of the American Aborigines" (Morgan) ... 853
"Geology of the Environs of Tokio" (Brauns) ... 854
"Resources of the Black Hills of Dakota" (Newton and Jenney) ... 854
"Measurements of the Force of Gravity at Tokio" (Mendenhall) ... 854
Botanist, A, of the Ninth Century ... 523
Bowen, Eliza A. ... 300
Broca, M. Paul, Sketch of. (Portrait.) ... 261
Brooks, Margarette W., Letter from ... 268
Brush, Professor George Jarvis, Sketch of ... 117
Bryant, Charles S., Letter from ... 553

PAGE

Bucknill, Dr. ... 806
Buildings, Prevention of Damp in ... 712
Burns and Scalds, Soda a Remedy for ... 663

Calendar, The Javanese ... 820
Cañon, The Unaweep ... 781
Carpenter, F. D. Y. ... 225
Carpenter, Dr. William B. ... 244
Cartholicism, Protestantism, and Suicide ... 220
Cemeteries, Sanitation of ... 422
Chinese Immigration: A Sociological Study ... 721
Climate and Character, American ... 109
Coal-Dust, Explosive Force of ... 425
Coal Production of the World ... 138
Coal, Spontaneous Combustion of ... 717
Coffee and Tea, The Chemistry of ... 359
Color-Blindness, Tests for ... 859
Colorado Desert, The ... 384
Comet *b*, 1881, Constitution of ... 427
Comets' Tails, Theories of ... 860
Convulsions, Epidemic ... 498
Copper-Mines of Isle Royale ... 122
Coyyright Law, Progress of ... 340
Correction, A ... 267, 403
Correspondence ... 122, 267, 403, 553, 842
Cremation in Italy ... 422

Davis, Dr. J. B., Death of ... 570
Deer-Horns, Evolution of ... 859
Delauney, G. ... 184
Desert, The Colorado ... 384
Deville, M. Henri Saint-Claire, Sketch of. (Portrait.) ... 543
Discoveries, Recent German Archæological ... 712
Disease-Germs ... 244
Diphtheria-Poison, Nature of ... 714
Dreams and the Making of Dreams ... 461
Drechsel, Dr. Edmund ... 512
Du Bois-Reymond, Emil ... 433

Earth-Worms and their Wonderful Works. (Illustrated.) ... 289
Editor's Table ... 123, 268, 404, 554, 696, 844
Education, Physical (Hygienic Precautions—Popular Fallacies) ... 56, 156
Eggs, About ... 855
Egyptian Marriage and Animal Worship ... 717
Electrical Exhibition, The International ... 141
Electricity, The Recent Wonders of ... 669, 786
England, Decline of Country Population in ... 140
Engler, Edmund A. ... 304
Entertaining Varieties ... 398, 548, 688, 830
Eocene Strata of Alabama, The ... 566
Error, A Typographical ... 403

PAGE
Ether, The Interstellar 142
Explosives, Modern 794
Explosives, Speed of 429

Fairchild, H. L. 448, 742
Fallacies, Popular 156
Farnsworth, P. J. 267
Fauna, Deep Sea, Characteristics and Diversities of 285
Feature, A New 556
Forces Inorganic, Balance and Compensation of 123
Fossils, New Carboniferous 861
France, New Conditions affecting Life in 860

Gannett, Henry 781
Gardens, The Floating, of Cashmere 284
Garretson, Frederick, M. D. 541
Geikie, James 665
German Naturalists and Physicians, Association of 574
Gesture-Speech 135
Gould, Professor B. A., Sketch of. (Portrait.) 683
Government, Elective, The Machinery of 628
Granville, Dr. J. Mortimer 102, 461
Guébhard, Adrien 175

Hakim ben Sheytan, Travels and Adventures of 688, 830
Hardaker, Miss M. A. 577
Hartwich, C. 523
Health, Heat and 573
Heart-Disease, Hope for Sufferers by 711
Heat and Health 573
Hildebrand, F. 657
Hitchcock, Professor C. H. 229
Hitchcock, C. H., Letter from 403
Houses, Ancient Aboriginal 287
Hovey, H. C., Letter from 403
Human Life, The Duration of 95, 553
Huxley, T. H. 165
Hyacinth-Bulbs 817
Hygienic Precautions 56

Ice Period, North America in the 229
Images of the American Stone Age 286
Indian Burial-Caves 711
Infectious Organisms, Cultivation of 424
Irving's Works, Copyright of 554

James, Joseph F. 384
Jews, Physiological Immunities of the 426
Jones, Louise Coffin, Letter from 123
Jurassic Birds and their Allies 312

PAGE
Kafiristan, The Kafirs of 138
Kingsley, J. S. 531

Lake Erie, Origin of 136
Lamp, The Bunsen. (Illustrated.) 378
Lansing, Gerrit L. 721
Larrabee, W. H. 289, 621
Lawes, Rev. W. G. 324
Leprosy, Hawaiian 567
Le Sueur, W. D. 615
Libraries, Free Circulating 698
Life, Human, The Duration of 95
Literary Notices 127, 275, 409, 557, 700, 847
Lockwood, Professor Samuel 477
Longevity, Antediluvian 842
Lounsbury, Professor T. R. 117
Lubbock, Sir John 65, 193
Lyell, Sir Charles. (Portrait.) 591

Macleod, H. Duncan 735
Malarial Organisms 857
Mammalian Foot, Development of the 572
Mammoth Cave 284
Mammoth Cave, Scientific Exploration of 403
Map, A Review 225
Marriage and the Family, are they in Danger? 713
Marsh, Professor O. C. 312
Materialism and Positivism 615
Matter, A Little 538
Mead, C. M., Letter from 842
Meteoric Stones, Discovery of Organic Remains in 83
Meteorites, Organic Remains in 568
Meunier, Stanislas 655, 778
Microbes, A Glossary of 718
Militancy and Industrialism in Virginia 271
Mind, The Practical Study of 554
Moon, Mountains of the 688, 830
Morality? Has Science yet found a New Basis for 753
Morality, Scientific, Goldwin Smith on 844
Morris, Charles 609
Morse, Professor Edward S. 528
Morselli, Henry, M. D. 220
Mound-Builders, Identity of the Indians with the 267
Mound-Builders, Inscriptions of the 421
Mound-Builders, Who were the 137

Nature, The Available Energy of 87
Negro, Intellectual Condition of the Savage 139
Nervous Conditions, Muscular Expression of 584
New Guinea and its People. (Illustrated.) 324
North America in the Ice Period 229

PAGE
Notes 143, 283, 430, 574, 719, 862
Nuisance, An Electrical 843
Number-Forms and Colors, Letter on 123

Obituary, Professors L. H. Morgan and John W. Draper 569
Organic Remains in Meteoric Stones 83
Oswald, Dr. Felix L. 56, 156
Oudemans, J. A. C 820
Outerbridge, A. E., Jr 538
Oyster-Beds, Deterioration of American 29, 145
Oyster, Longevity of the 477
Oysters, Sewage in 857

Paleontology, Rise and Progress of 165
Panama Canal, Our Policy respecting the 273
Panama Canal, The Gulf Stream and the 665
Paris, Time-keeping in. (Illustrated.) 304
Pasteur, M. Louis, Sketch of. (Portrait.) 823
Pathology, Scientific and Popular Experiments in 714
Peach-Trees, The Yellows in 856
Peppercorne, F. 663
Pettenkofer, Dr. Max von 332, 468
Photometry 428
Physiological Chemistry, The Fundamental Problems of 512
Plants, Fifty Years' Study of the Distribution of 710
Plant-Life, Influence of Electric Light on 569
Plants, Longevity of 657
Plants, Movements of 421
Popular Miscellany 135, 284, 420, 566, 710, 855
Popular Science Monthly, Charges against the 404
Population, Finding the Center of 420
Positivism and Materialism 615
Powell, Professor John W., Sketch of. (Portrait.) 390
Preece, W. H 669, 786
Prescott, Albert B. 359
Publications received 135, 283, 420, 565, 709, 854
Putnam, G. P.'s Sons, Letter from 551

Quackery within the Profession 681
Question, An Archæological 403

Railroads, Safety on Suburban 716
River-Antelope, A South African 427
Rocks and Soil, Effects of Lightning on. (Illustrated.) 655
Rocks, Vibration of, in Patapsco Valley 541
Rodents, Fossil and Living 423

Salt Lake, Freezing of a 858
Sanitary Relations of the Soil 332, 468
Science, A Dangerous Tendency in 715
Science, A Half-Century of 65, 193

PAGE
Science and Party Government 696
Science and the Woman Question 577
Science-Teaching, An Experience in 242
Science, Modern, The Scholastic Prelude to 735
Scientific Instruments, A Collection of Quaint 858
Sea-Water, Does it contain Free Carbonic-Acid Gas? 428
Sea, The Sirens of the. (Illustrated.) 621
Seeds, Fossil. (Illustrated.) 778
Sex, Equality and Inequality in 184
Shells, Ancient and Modern 136
Sheytan, Hakim Ben, Travels and Adventures of 688, 830
Shipman, Paul R. 315
Signal Service, Extension of the 507
Sketch of Professor B. A. Gould. (Portrait.) 683
Smith, Professor Goldwin 628, 753
Snakes, Australian 567
Society, The Industrial Type of 1
Soda, A Remedy for Burns and Scalds 663
Soil Analysis, Value of 566
Soil, Sanitary Relations of the 332, 468
Solaville, M. de 95
Soldering by Pressure 862
Sound and Radiant Heat 650
Spectrum, Action of the Different Rays of the 139
Spectrum Analysis, The Real Discoverer of 568
Spencer, Herbert 1
Sponges, Propagating, by Cuttings 141
Suicide, Catholicism, Protestantism, and 220
Sulphurous Acid, Disinfecting Powers of 429
Swift's, Dean, Disease 806

Telelogue, The 286
Temperature, Influence of, on the Chirp of the Cricket 268
Thomson, Sir William 87
Tiflis, The Archæological Congress at 572
Time, A Glimpse through the Corridors of 479
Time-keeping in Paris. (Illustrated.) 304
To Eat and to be Eaten 609
Towne, Edward C. 109
Transcendental Physics 315
Trees, Fossilized Standing 429
Trouve's Electric Canoe 137
Trowbridge, C. A., Letter from 122
Trowbridge, Professor John 507
Tyndall, Professor John 650
Typography and Eye-sight 424

Vegetable Structures, Permanence of 861
Venus, Approaching Transit of 857
Vision, Experiments in 142

PAGE
Volcanic Products. (Illustrated.) 347
Volcanoes, The Supposed, in Central Asia 715
Volcanoes: Their Action and Distribution. (Illustrated.) 43
Vortex-Rings, Studies of. (Illustrated.) 175

Ward, Stanley M. 242
Warner, Dr. Francis 584
Whales and their Habits 423
Winslow, Erving 683
Winslow, Lieutenant Francis 29, 145
Woman Question, The, from an Anthropological Point of View 275
Word-Blindness 570
World-Problems, The Seven 433
Worry 102

Yandell, David W. 498
Yorktown Centennial, Further Lessons of the 268

END OF VOL. XX.